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(54) DEVICE FOR CHARGING AND DISCHARGING CURRENT

constant current in a wide range is obtained.

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(57) Abstract:

PROBLEM TO BE SOLVED: To operate with voltage that is higher than the withstand pressure of a single transistor and also to improve an output constant current characteristic by serially connecting each transistor between a power source and a ground potential and specifying each gate voltage.

SOLUTION: In a charge pump circuit of a PLL, an output transistor is a cascode structure and also respectively selects gate voltage of each transistor. That is, plural MOS transistors 1 and 2, and 3 and 4 are cascaded between a power supply terminal and an output terminal and between the output terminal and a ground terminal respectively. Bias voltages which bring the transistors 1 and 4 into a saturation state are applied to the gates of respective 1st transistors 1 and 4, and also, voltage of a voltage level which brings the transistors 2 and 3 into a saturation state or non-conductive state is switched and applied to the gates of 2nd transistors 2 and 3 in accordance with the on/off of a pulse. Thus, a PLL circuit having high performance which acquires

